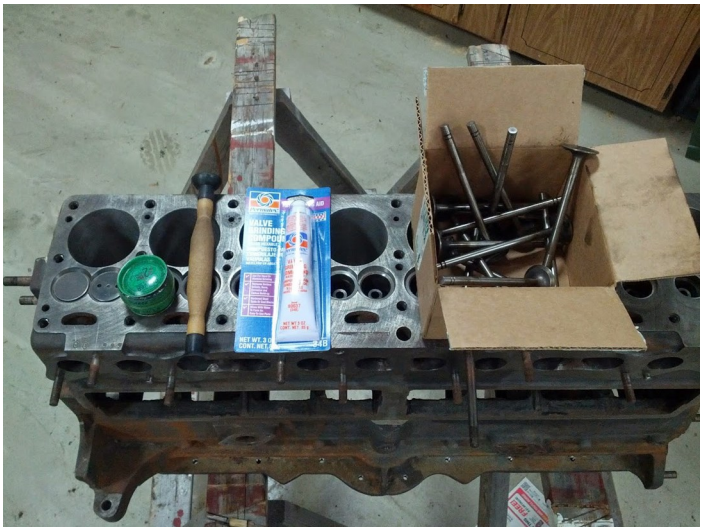
SIMPLE VALVE JOB by Thomas Quick

One of the things that used to frustrate me when I was younger and working on cars was people always telling me that you can't do that… hire a professional, whether it be rebuilding an engine or painting a car. Well……I've rebuilt lots of engines and painted more than a few cars. Although I do not have a machine shop and have to send things such as boring cylinders out to a professional, there is no reason that most of the work cannot be done by a decent mechanic or even a beginner as long as they have proper guidance.

Grinding valve seats is one of those easy jobs that you can do yourself. I had an engine that needed the seats cleaned up. My guides where good and the valves were new so only the seats needed attention. There are several ways to go about this. You can use a valve grinder which uses stones. Nothing wrong with that method, but I opted for something even simpler I believe.

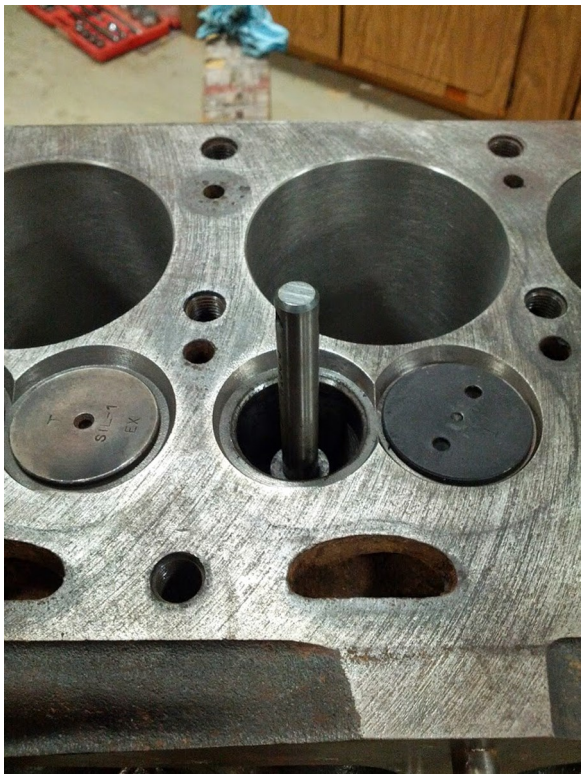


The tools and materials involved with the valve grinding job are not expensive and easy to learn to use.

I went to woodwardequipment.com and ordered three things: 1. Neway valve seat cutter 1-3/8 31 degree X 46 degree (item number CU201). 2. Neway 150 series expanding pilot, 11/32 (item 150 11/32). 3. Neway T-wrench, ½ hex nylon fiber (item TW505).

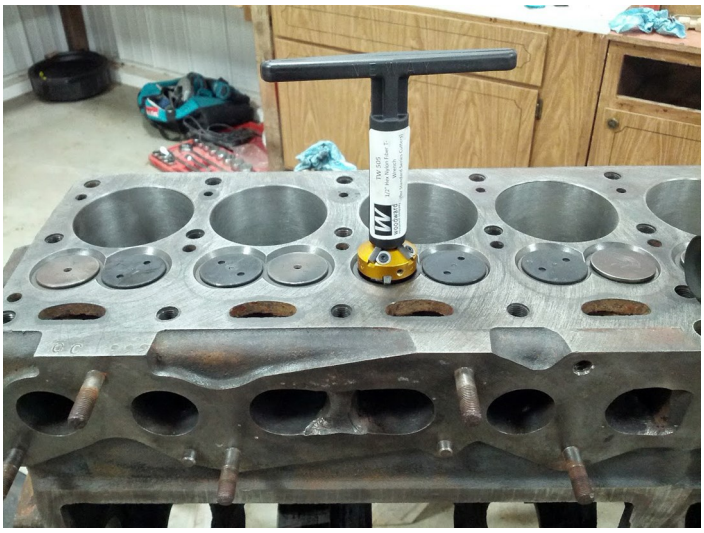
The cutter has two sides and is reversible for doing the intakes (31 degree cut) and exhausts (46 degree cut). I also went with the expanding pilot so that if I did have a little play in the guides it would expand to keep the cutter centered so the seat is cut straight.

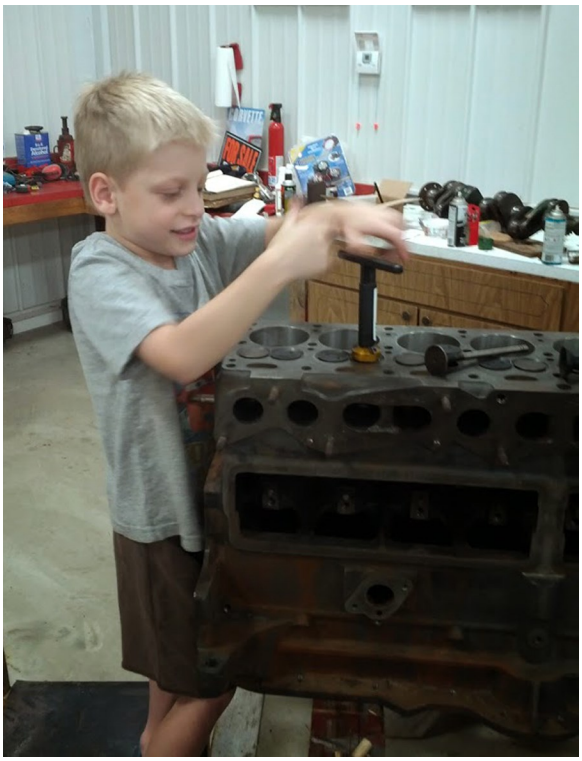
The process is pretty simple. The expander pilot goes into the guide and you screw/lock it in place from the bottom. Then all you do is put the cutter down the shaft, put on the handle and slowly turn until your seat is clean with no pits…….nothing more! No reason to remove more metal than you have to…… just lightly apply pressure and turn. Most seats just needed a turn or two. The exhaust typically takes a turn or two more.



The expander pilot installed in the guide.

Here are some things to look out for. Make sure you use the right angle for the valves. Intakes are cut at 31 degrees and the exhaust is 46 degrees. The corresponding valves are at 30 and 45 degrees. The idea is to limit the amount of surface area contact. Also, the cutting pads on the cutter are adjustable and I've used it on several engines. Make sure to adjust the pads so they completely cover the seat you are cutting. Don't get your valves mixed up once they are lapped. Number the valves and when you put the engine together make sure they go back in the guide that they were lapped in.





Valve grinding tool inserted into the valve seat and centering pilot. Right: As you can see, this job is so simple and easy that even my five year old son Son Cayden is capable of doing a great job on this Auburn six-cylinder block.

The next step is to lap the valves. Use some lapping compound and only apply it to the seat. It doesn't take much. Put the valve in place and with the suction cup tool rotate the valve back and forth a few times, then lift the valve up and turn it a little, then drop and rotate it again. Do this a few times and check to see if you have a nice ring around the seat and valve. If you do then you are done. Clean all the compound off the valve and block and go to the next valve. A word of caution. Use minimal compound. You don't want to get it on the shaft of the valve or you will be grinding your guides! Use as little as you can and clean it well afterward.

There are videos on YouTube on how to do this. Watch a few and get comfortable with them before you start. This isn't rocket science!

https://www.youtube.com/watch?v=QIVj_L1akl4
https://www.youtube.com/watch?v=7GEmuQa3dPY

Disclaimer: I'm just a do it yourselfer and not a professional. If you have any questions about this then seek professional guidance before you start.